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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,375	06/13/2001	Bulent O. Yavuz	3638G	4986

7590 07/27/2004

Chief Patent Counsel
Engelhard Corporation
101 Wood Avenue
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EXAMINER

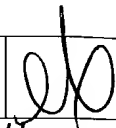
ILDEBRANDO, CHRISTINA A

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/880,375	Applicant(s) YAVUZ ET AL.	
	Examiner Christina Ildebrando	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43 and 71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43 and 71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 43 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,296,198) in view of Hertl et al. (US 5,284,638) and Wan et al. (US 4,714,694).

Abe et al. (US 5,296,198) teaches a process for the purification of exhaust gas emanating from an internal combustion engine that contains nitrogen oxides and hydrocarbons. It is taught that the catalytic system comprises a hydrocarbon adsorbent and additional catalytic material to reduce the nitrogen oxides present in the exhaust gas stream (column 2, line 65 – column 3, line 7). It is taught that the adsorbent used is a high silica zeolite and that it is exchanged with a noble metal such as Pt or Pd. It is taught that the additional catalytic material is a heat resistant oxide containing at least one noble metal (column 3, lines 36-42). The reference further teaches that the zeolite is used to adsorb hydrocarbons from the cool exhaust gas upon start up of the engine and that as the temperature rises, said hydrocarbons are released from the zeolite and converted by the catalyst material (column 4, lines 24-40). The zeolites mentioned by the reference include ZSM-5 and Y (column 5, lines 17-31). It is also taught that the

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zeolite to be used should be the hydrogen type in view of the heat resistance such type gives (column 5, lines 45-48).

The second component of the catalyst system is a heat resistant oxide, such as alumina, titania, zirconia, or silica, and it is taught that additional rare earth oxide such as cerium should be added in order to achieve a higher three way catalytic activity and heat resistance (column 6, lines 39-48).

It is further taught that the amount of zeolite to oxide material is between 10:90 to 85:15 and the total noble metals loaded are present in an amount between 10-35 g/ft³ (column 6, lines 49-57). These values overlap or encompass the amounts of materials instantly claimed. It is taught that the materials are loaded on to a honeycomb monolith structure (column 9, lines 1-23).

The difference between the reference to Abe et al. and the claims are that the reference does not teach the instantly claimed surface area of the bulk ceria present or the use of beta zeolite.

The reference to Hertl et al. (US 5,284,638) also teaches a catalyst system that comprises both a zeolite adsorbent used in conjunction with a heat resistant metal oxide for use in exhaust gas treatment processes. It is taught that the catalyst/adsorbent combination is effective for use in diesel engines (column 3, line 27). It is also taught that the adsorbent used can be zeolite Beta or ZSM-5 or Y zeolite (see column 4, lines 41-44 and the Table at column 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Abe et al. to include the use of

zeolite Beta, in light of the teachings of Hertl et al. One of ordinary skill would have been motivated to use the zeolite beta of Hertl et al. in the composition taught by Abe et al. because zeolite Beta is an art recognized functionally equivalent adsorbent to the zeolites of Abe et al. Because both catalyst compositions can be used in analogous processes, i.e. exhaust gas purification processes, one would have a reasonable expectation of success from the combination.

With respect to the surface area of the ceria, Wan et al. (US 4,714,694) teaches the manufacture of a diesel exhaust gas catalyst. It is taught that a beneficial catalyst carrier can be produced by using alumina having a surface area meeting the instant claims in combination with bulk ceria having the required surface area. See column 10, lines 1-35 and the Examples of '694. It is taught that a platinum group metal is supported by the composition. Finally, it is taught that the catalyst composition is effective for the oxidation and reduction of components found in the exhaust gas emanating from the diesel exhaust gas engine.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the invention of Abe et al. to include the use of a cerium oxide component having the claimed surface area in light of the teachings of Wan et al. One of ordinary skill in the art at the time the invention was made would have had the motivation to use the specific alumina ceria catalyst composition of Wan et al. in conjunction with the zeolites in the process taught by Abe et al. because of the functional equivalence of the ceria-alumina-noble metal catalyst of both Wan et al. and Abe et al. Because both catalyst compositions can be used in the

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purification of exhaust gas, one would have a reasonable expectation of success from the combination.

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ.

Regarding claim 43, the recitation "wherein the catalyst excludes alumina" is noted by the examiner. If it is considered that the modified disclosure of Abe et al. does not specifically meet the limitation excluding alumina, the Abe et al. reference does disclose other heat resistant metal oxides (i.e. silica, titania, and zirconia) which are functionally equivalent to alumina. Therefore, it would have been obvious to substitute any of the functionally equivalent heat resistant metal oxides for alumina, with a reasonable expectation of success, to arrive at a composition which excludes alumina.

Regarding claim 71, the "consisting essentially of" language in the claim is noted. The term limits the claim to the specified ingredients and those that do not affect the basic and novel characteristics of a composition. *Ex parte Davis et al.*, 80 USPQ 448.

When applicant contends that modifying or additional components in the reference composition are excluded by the recitation "consisting essentially of," applicant has the burden of showing the basic and novel characteristics of the claimed composition, i.e. a showing that the introduction of these components would materially change the characteristics of applicant's composition. *In re De Lajarte*, 143 USPQ 256.

Response to Arguments

3. Applicant's remaining arguments filed July 2, 2004 have been fully considered but they are not persuasive. The discussion in the office action mailed January 2, 2004 is incorporated by reference herein.

Applicant argues that there is no disclosure in Abe '198 of the specific combination of a beta zeolite in combination with bulk ceria and without a heat resistant alumina as presently claimed in claim 43. While this may be true, the Abe et al. reference clearly teaches that alumina, silica, titania, or zirconia may be used as the heat resistant inorganic oxide, thereby giving one of ordinary skill motivation to use any of the named oxides in combination with a zeolite and cerium oxide. Therefore, it is the position of the examiner that the teachings of the reference would render the limitation "excludes alumina" obvious.

Applicant further argues that Abe et al. does not disclose a composition consisting essentially of the recited Beta zeolite with bulk ceria and catalytic metals as required by claim 71. The transitional phrase "consists essentially of" limits the scope of the claim to the specified materials or steps "and those that do not materially affect the

basic and novel characteristics” of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). For search and examination purposes, absent a clear indication in the specification of what the basic and novel characteristics actually are, “consists essentially of” will be construed as equivalent to “comprising.” When an applicant contends that additional steps or materials in the prior art are excluded by the recitation “consists essentially of,” applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant’s invention. *In re De Lajarte*, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also *Ex parte Hoffman*, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989). Applicant has not met this burden. It is not clear from the record which component applicant intends to exclude by the “consisting essentially of” language.

Finally, applicant argues that Hertl et al. does not disclose the use of Beta zeolite in the absence of a heat resistant metal oxide. This has been considered but is not persuasive. First, as discussed above, the Abe et al. reference teaches additional heat resistant oxides which may be used instead of alumina – therefore, it is the position of the examiner that the Abe et al. reference would meet “excludes alumina.” The Hertl reference is not relied upon to teach the absence of alumina, but rather the substitution of zeolite beta. With reference to column 6, lines 35-50 of ‘198 and columns 3-4 and 7 of ‘638, it is clear that the zeolites in the catalyst compositions taught by the references function in an analogous manner to purify automobile engine exhaust gas and therefore the beta zeolite taught by the Hertl reference is analogous and functionally equivalent to the zeolites taught by the primary reference, thereby providing one of ordinary skill

motivation to combine the teachings of the reference. Applicant has not presented any evidence tending to establish the zeolites of Abe '198 and Hertl would not be functional equivalent. Therefore, applicant has not rebutted the prima facie case of obviousness set forth by the examiner. In addition, the examiner notes for the record that the claims do not require "in the absence of a metal oxide," as argued by applicant, and claim 71 does not contain this limitation.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

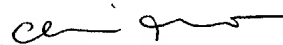
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (571)

272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Christina Ildebrando
Patent Examiner
Art Unit 1725

7/22/04

CAI
July 22, 2004